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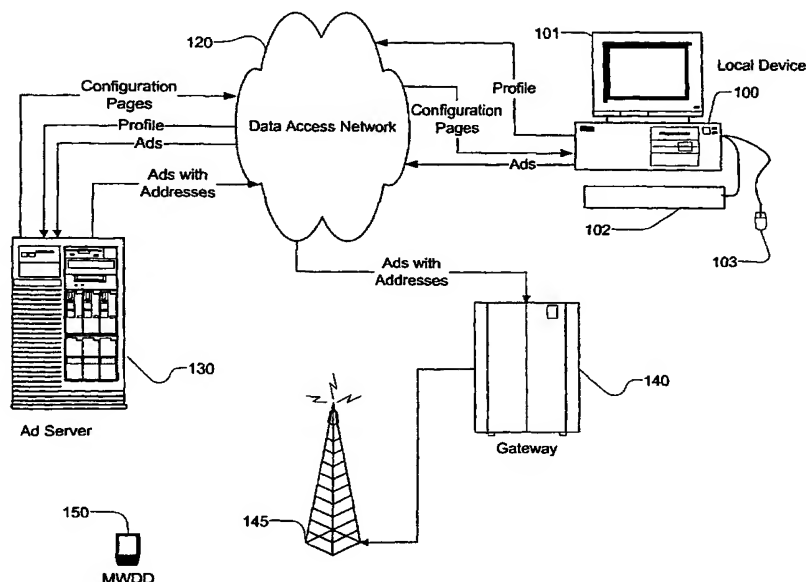
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(54) Title: METHOD FOR ADVERTISERS TO PROVISION ADVERTISEMENTS SENT TO MOBILE WIRELESS DISPLAY DEVICES



(57) Abstract: An advertiser can provision advertisements for receipt on subscribers' mobile wireless display devices. In accordance with the invention, the advertiser may identify desired recipients for its advertisements based upon demographic and geographic characterization of the subscribers. Furthermore, the advertisers can select the days and times for delivery of their content, and the number of times that a subscriber should receive their advertisement in a unit time period. Accordingly, the advertiser is provided with the power to precisely target advertising to mobile wireless display devices.



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## **Method for Advertisers to Provision Advertisements Sent to Mobile Wireless Display Devices**

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### **10 RELATED APPLICATION INFORMATION**

This application is related to Application No. 09/057,394, entitled "Wireless  
Communication Device With Markup Language Based Man-Machine Interface,"  
and filed on April 8, 1998 by Adam de Boor and Michael D. Eggers, assigned to the  
same assignee as the present application, which application is incorporated herein by  
15 reference.

This application is related to Application No. 09/075,405 entitled "Integrated  
Advertising for Wireless Communication Devices With Rich Content and Direct  
User Response Mechanism," and filed on May 8, 1998 by Adam de Boor and  
Michael D. Eggers, assigned to the same assignee as the present application, which  
20 application is incorporated herein by reference.

This application is related to Application No. 60/138,994 entitled  
"Subscriber Control of Advertisements Received on a Mobile Wireless Display  
Device," and filed on June 14, 1999 by Charles Boyle, David Tokunaga, John Fonte,

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and Adam de Boor, assigned to the same assignee as the present application, which application is incorporated herein by reference.

This application is a continuation-in-part of Application No. 60/138,995 entitled "Provisioning by Advertisers of Advertisements Sent to Mobile Wireless Display Devices," and filed on June 14, 1999 by Charles Boyle, David Tokunaga, John Fonte, and Adam de Boor, assigned to the same assignee as the present application, which application is incorporated herein by reference.

This application is related to an application entitled "Method of Subscriber Self-Selection of Advertisements Received on Their Mobile Wireless Display Devices," and filed on August 31, 1999 by Charles Boyle, David Tokunaga, John Fonte, and Adam de Boor, assigned to the same assignee as the present application, which application is incorporated herein by reference.

**BACKGROUND OF THE INVENTION***1. Field Of The Invention*

The present invention relates to user control of advertisements received on a mobile wireless display device.

*5 2. Description Of Related Art*

Wireless communication devices are becoming increasingly prevalent for personal communication needs. These devices include, for example, cellular telephones, alphanumeric pagers, "palmtop" computers and personal information managers (PIMs), and other small, primarily handheld communication and  
10 computing devices. Wireless communication devices have matured considerably in their features, and now support not only basic point-to-point communication functions like telephone calling, but more advanced communications functions, such as electronic mail, facsimile receipt and transmission, Internet access and Web browsing and the like.

15 A subset of wireless communications devices can be considered "mobile wireless display devices." These devices are able to receive transmissions from a wireless service provider, and further include an alphanumeric display which can display at least 12 characters. Mobile wireless display devices include smart phones, alphanumeric pagers, and mobile phones having multiline displays, including many  
20 cellular, PCS and satellite phones. It has also become common for PDAs and other mobile information devices to include interfaces for wireless communication reception and sometimes even transmission. Not only have small devices such as PDAs been given more features, larger devices have shrunk. Thus, portable PCs,

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such as notebook computers, having wireless receivers and transceivers are available. These, too, are mobile wireless display devices.

One of the current problems facing wireless service operators providing cellular services on wireless communication devices is the delivery of electronic advertising. Service operators desire to provide advertising directly on the wireless communication device, as a way of garnering additional revenue or reaching additional subscribers by allowing the service operator to charge the subscriber less, making up the difference with advertising revenue.

Mobile wireless communications devices, however, are usually considered to be very personal devices; subscribers are very sensitive about what is delivered to their devices. Current advertising systems are fairly heavy-handed, and do not include an element of self-selection in how they choose which advertisement to provide in an advertising slot. Rather, they rely on coarse and inaccurate mechanisms. For example, service providers run the risk of delivering an advertisement for a competitor – potentially leading a subscriber to switch to a different service provider. Furthermore, subscribers who are bombarded with unwanted advertisements will either learn to disregard all ads, or will reduce their use of the mobile wireless display device.

One of the current problems facing service operators providing cellular services on wireless communication devices is the delivery of electronic advertising. Service operators desire to provide advertising directly on the wireless communication device, but the software architecture of conventional wireless communication devices does not accommodate the direct integration of

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advertisements into the user interface or the ability for the subscriber to directly respond to an advertisement.

For example, one current method of electronic advertising is via a paging service built into the messaging service operator's GSM cellular network.

5 Customers receive a "page" on their wireless communication device, the page being a text message that contains the promotion and instructions for reaching a customer service center to change to a new rate or service plan.

This method has a number of limitations. First, subscribers generally have a low tolerance for advertising, but they like it even less when it interferes with their use of their equipment. To be acceptable, advertisements must be displayed only when the subscriber is not actively using the wireless communication device to accomplish a task.

However, in the paging method the advertisements are very intrusive to the subscriber. The messages are delivered to the subscriber's "in box" along with all other paging messages. The subscriber must read through and delete the advertisements in order to get to an important personal message. Undeleted advertisements can "clog" the inbox (which can only hold a fixed number of messages) preventing the delivery of important messages to the subscriber.

Second, the paging advertisements do not contain "rich" content. These advertisements are subject to all the restrictions of the Short Messaging Service (SMS), particularly a single font, no graphics, and no character styles such as boldface or italic. It is nearly impossible to make such advertisements visually

appealing or eye-catching. This limitation reduces the value of the advertisements to potential advertisers.

Third, it is important to enable a subscriber to respond immediately to an advertisement in order to “sign up on the spot,” for the simple reason that he may  
5 lose interest while waiting for additional information to be downloaded to the wireless communication device. A variety of back-channels are important, since some advertisers will prefer to connect a potential customer directly to a sales agent, while others would rather have an automated system that can log the request and automatically start the service. (The latter is likely the case for information  
10 services.)

However, the paging method has a very limited and primitive response mechanism. All that the advertisement can do is supply a telephone number that the subscriber must manually dial, or supply other instructions to be followed by the subscriber at his initiative. Further, because the subscriber must initiate and make  
15 the telephone call, the subscriber is responsible for explaining the purpose of the call and acquiring the advertised service. The customer service center receives no information other than that provided by the subscriber.

A related type of electronic advertising is found on the World Wide Web. Most commercial pages on the World Wide Web contain a small “banner”  
20 advertisement at the top to generate additional income to the content provider. Web banner advertisements are typically animated images that transfer the user to another Web site when clicked upon with the mouse. This approach is inadequate for wireless communication devices for a number of reasons.



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Web banner advertisements of this type are too expensive to transmit via data channels on cellular networks. Web banner advertisements are typically large animated graphic images, and data transmission over cellular networks is either expensive (involving making a data phone call, which results in the normal air-time charges) or slow (SMS is inexpensive, but each message can only transmit 140 octets characters of information).

Second, the size of the screen display on a typical wireless communication device is too small for a Web banner advertisement and other content to fit on a single screen. With graphical screens on wireless communication devices being generally 25x37 mm, there is insufficient area to incorporate advertising with normal screen content of the user interface of the device.

Third, conventional Web banner advertisements also have a very limited response mechanism. Conventional Web banner advertisements merely transfer the user to a special advertising page hosted by a provider of the advertisement. This system is not useful for wireless communication devices because of the inherent latency and low bandwidth of the transmission medium. It is impractical to force the subscriber to wait for up to half a minute for an advertising page to be downloaded. In addition, conventional banner advertisements generally do not collect enough information to form a complete transaction.

Related to banner advertisements are screen-saver based advertisements found on desktop computers. In this approach, a screen saver can display advertising while the computer is idle. Screen saver advertisements are very similar

to Web banner advertisements, and suffer from exactly the same problems when  
applied to wireless communication devices.

Current advertising systems do not include an element of self-selection in how they choose which advertisement to provide in an advertising slot. They generally fall into three types: billboard, channel, and personalized. In the billboard system, whoever bought the slot gets their advertisement there. In the channel system, an advertisement appropriate to the demographic associated with the content around the advertising slot (e.g. TV show, magazine, web page) is chosen. In the personalized system, the system infers interest on the basis of ongoing, personal monitoring of the viewer's behavior (topic searches, subscriptions, email, travel/location) or subscriber-entered demographic data, and delivers an advertisement based on that inference. Although all three types provide some measure of targeting, none is adequate to solve the needs of wireless service providers.

Advertisers find it desirable to target advertisements to relevant potential customers. For example, an advertiser of motor oil would prefer to target car owners with its advertising. A Boston restaurant would prefer to target residents of Boston and business travelers rather than children living in San Francisco. Moreover, advertisers prefer to pay for advertising based upon the number of relevant consumers who are actually exposed to the advertisement. For typical advertising media, it is often difficult for an advertiser to precisely determine whether its advertisements were actually viewed by a subscriber and for how long, and whether the advertisement induced a response. Accordingly, there exists a need for a

targeted advertisement system that also can provide information as to the characteristics of those who were exposed to each advertisement, for how long the subscriber was exposed, and at what times.

**SUMMARY OF THE INVENTION**

In accordance with the present invention, an advertiser can provision advertisements for receipt on subscribers' mobile wireless display devices. In accordance with the invention, the advertiser may identify desired recipients for its  
5 advertisements based upon demographic and geographic characterization (fixed address as well as their current location, and whether they are in motion) of the subscribers. Furthermore, the advertisers can select the days and times for delivery of their content, and the number of times that a subscriber should receive their advertisement in a unit time period. Accordingly, the advertiser is provided with the  
10 power to precisely target advertising to mobile wireless display devices.

Still further objects and advantages attaching to the system and to its use and operation will be apparent to those skilled in the art from the following particular description.

**DESCRIPTION OF THE DRAWINGS**

Further objects of this invention, together with additional features contributing thereto and advantages accruing therefrom, will be apparent from the following description of a preferred embodiment of the present invention which is  
5 shown in the accompanying drawings with like reference numerals indicating corresponding parts throughout and which is to be read in conjunction with the following drawings, wherein:

Figure 1 is a first block diagram of a network data distribution system in accordance with the invention.

10 Figure 2 is a frontal plan view of a mobile wireless display device in accordance with the present invention.

Figure 3 is a frontal plan view of a mobile wireless display device in accordance with the invention.

Figure 4 is a flow diagram of a method of provisioning by advertisers of  
15 advertisements sent to mobile wireless display devices in accordance with the invention.

Figure 5 is a flow diagram of a method of subscriber registration in accordance with the invention.

Figure 6 is a flow chart of a method of preference setting in accordance with  
20 the invention.

Figure 7 is a flow chart of a <sup>12</sup>method of selecting advertisements in accordance with the invention.

Figures 8A and 8B are views of database objects of a subscriber database in accordance with the invention.

5        These and additional embodiments of the invention may now be better understood by turning to the following detailed description wherein an illustrated embodiment is described.

**DETAILED DESCRIPTION OF THE INVENTION**

Throughout this description, the preferred embodiment and examples shown should be considered as exemplars, rather than limitations on the apparatus and methods of the present invention.

5     The System of the Invention

The system of the invention enables ads to be sent to mobile wireless display devices based upon: a subscriber's personal profile information; the scheduling requirements of the ads; and the demographic, target behavior profile, or subscriber location requirements of the ads.

10           As used herein, an "ad" is an advertisement or promotion. An "ad message" means a discrete communication sent in a communications channel. Whereas "ad message" relates to the transmission process, "ad content" relates to the information conveyed by the ad message. Ad content includes a visual component, such as text or graphics, and may also include audio, video and / or other physical feedback. Ad  
15     messages are not sent in real time, so although the recipient of an ad message may respond directly to its corresponding ad content, neither the ad content nor the response are sensitive to delays. Of course, at some point, the delays may impact the effect of the ad content or the response, notably because the ad or the response may get "stale." However, the underlying transport is not sensitive to delays.

20           Referring now to Figure 1, there is shown a block diagram of an ad message distribution system in accordance with the invention. Figure 1 includes a local device 100, a data access network 120, an ad server 130 (more properly, an ad

message server), a gateway 140, a radio tower 145 and a mobile wireless display device 150.

The local device 100 preferably comprises a client computer which is configured to access the ad server 130 via the data access network 120. The client  
5 computer may be, for example, a PC running a Microsoft Windows operating system. The local device 100 preferably includes an output device, such as display 101, and an input device, such as keyboard 102 and / or pointing device 103 (e.g., mouse, track ball, light pen, or data glove). The local device 100 may also be, for example, an Internet appliance, network computer (NC), or an appropriately  
10 Internet-enabled device such as a portable digital assistant (PDA), mobile phone, refrigerator, etc. The particular type of device of the local device 100 is not considered to be important so long as the local device 100 can provide some measure of individual subscriber interactivity with an online service. Nor is it required that the local device 100 be different from the mobile wireless display  
15 device 150; they may be one and the same. Although not shown, other devices such as web servers may also be connected to the data access network 120 and be accessible from the local device 100. A browser application, such as Microsoft Internet Explorer or Netscape Navigator is preferably installed on the local device 100.

20 The data access network 120 provides lower layer network support for the local device 100 to interact with the ad server 130. The data access network 120 preferably comprises a common or private bi-directional telecommunications network (e.g., a public switched telephone network (PSTN), a cable-based



telecommunication network, a LAN, a WAN, a wireless network), coupled with or overlaid by a TCP/IP network (e.g., the Internet or an intranet). TCP/IP, however, is not a requirement of the present invention.

The gateway 140 is preferably a server and associated devices which interface the data access network 120 to the radio transmitter 145, as known in the art. The gateway 140 is preferably part of a network operations center. Figure 1 shows the ad server 130 and the gateway 140 communicating through the data access network 120. Alternatively, the ad server 130 and the gateway 140 may be connected through a network which is separate from the data access network 120, or could be connected directly, such as within a service operator's facilities. In these alternatives, the ad server 130 might also be a part of the network operations center. The radio tower 145 may be terrestrial or airborne.

The gateway 140 preferably also has tracking capabilities. That is, in the manner known in the art, the location of a subscriber's mobile wireless display device is known to the gateway 140, or the gateway 140 can obtain this information from the service provider's network information center. Depending on the type of mobile wireless display device and the service provider, the precision of the location information varies. Furthermore, some service providers may be unable to determine the location information. Since mobile wireless display devices are mobile, the gateway 140 preferably can locate the mobile wireless display devices as they move. To the extent that the gateway 140 can obtain subscriber location information, the gateway 140 preferably provides this information to the ad server

130. Whether a mobile wireless display device is stationary or moving can also be determined within a reasonable margin of error.

The ad server 130 preferably is a computer system, such as a server computer. Alternatively, the ad server 130 may be considered to represent a number  
5 of physical devices which as a group provide the indicated network services. The ad server 130 acts as a recipient of certain information transmitted by the local device 100, as described further below. The ad server 130 preferably also transmits certain data to the mobile wireless display device 150 as described further below.

Although only one local device and one mobile wireless display device are  
10 shown in Figure 1, the system of the invention contemplates any number of these devices.

Referring now to Figure 2, there is shown an enlarged view of the mobile wireless display device 150. The mobile wireless display device shown is a cellular phone, although it will be appreciated that other mobile wireless display devices,  
15 such as PCS phones, pagers, PDAs enabled with wireless communications capabilities, and satellite-based phones are also within the scope of the invention. Indeed, the mobile wireless display device 150 may actually consist of two devices linked together: one interfacing to the wireless communications network, and the other serving to display the ad content.

20 The mobile wireless display device 150 is shown having a display 200 which is logically divided into a status bar 210, a title bar 220 and a content area 250. The status bar 210 is preferably always present and displays items such as signal strength 211, battery strength 212, and message-waiting indicator 213. A

mode indicator 214 may also be included to indicate the mode for text entry, whether alpha, numeric, or a combined alphanumeric mode.

The title bar 220 preferably displays an identification of the content in the content area 250. For example, the title bar 220 might display "Promo" for a promotion or advertisement in the content area 250, "Phone Book" if the content  
5 area 250 is being used to show phone book entries, or "Dialing" if the phone is dialing a number.

The content area 250 is used to display the particular content of a user interface page, for example, text of a message, phone book entries, advertisements,  
10 phone numbers being dialed and the like. In the content area 250, a focus and selection icon may optionally be used to indicate the particular item or line of content that has the focus, i.e. is the current user interface gadget or input field.

Figure 3 shows the mobile wireless display device 150 with a graphical advertisement. The advertisement of Figure 3 covers the title area 220, and includes  
15 soft key labels 255 along the bottom of the content area 250 (though other locations may be used).

Any of the pages or content displayed on the screen display 200 may be obtained locally or remotely, such as from the Internet or World Wide Web. Examples of local content include advertisements, a telephone book, received text  
20 messages, and the like.

The ad content and portions thereof (e.g., objects) may be delivered to the mobile wireless display device 150 in many ways. For example, ad content may be

delivered to a mobile wireless display device<sup>10</sup> at a first point in time and stored, and ad messages sent later to the mobile wireless display device would cause the ad content to be conveyed to the subscriber. Thus, batches of ad content may be delivered to a mobile wireless display device at a time which is lower in cost or  
5 when there is less wireless traffic. Furthermore, some aspects of the ad content may be delivered using fixed communications means (e.g., wireline), and also activated by ad messages.

In most embodiments, the mobile wireless display device 150 will have at least some displayable objects, and signals from the ad server 130 cause these  
10 objects to be displayed in the content area 250 (Figure 2). For example, characters of the alphabet may be pre-stored in the mobile wireless display device 150 during its manufacture, and signals sent to the mobile wireless display device 150 would identify the characters forming the ad content to be displayed. Displays may also be generated through a combination of pre-stored and transmitted objects.

15 The ad content is preferably formatted to be compatible with a wide range of mobile wireless display devices. In general, a text-only message of less than 100 characters will be compatible with a majority of current mobile wireless display devices. In one embodiment, the GSM Short Message Service is utilized. Each advertisement preferably contains no more than one discount, and an expiration date.  
20 The expiration date is used to create a sense of urgency to the subscriber. Limiting an ad to a single discount is desirable to avoid clutter. Since most mobile wireless communication devices have a small display, the limited space should be used for maximum impact. Furthermore, because many mobile wireless display devices are

used by subscribers during other activities such as while driving, the intrusiveness and scope of distraction of the message should be moderated.

Several ways to redeem an ad are possible. Preferably, redemption also provides the advertisers and service providers a way to track transactions and the associated revenue. For mobile phones, a phone number or promotion code are the preferred bases for redemption. With a phone number, the subscriber can call a phone number especially designated by the advertiser or the service provider. Telephone-based redemption also permits the subscriber to find local outlets of the advertisers' businesses, and to receive additional information from the advertisers. With a promotion code, the subscriber contacts the advertiser either in person, by phone or electronically to receive the benefit of the ad. Some smart phones support soft keys, and a one-touch smart key may be included in the ad content for redemption. Similar capabilities may be provided in two-way pagers.

#### The Method of the Invention

Referring now to Figure 4, there is shown a block diagram of the ad server 130 and how the ad server 130 allows advertisers to provision advertisements in accordance with the invention. The method of the invention has four basic processes: an advertiser registration process 450, an ad registration process 460 and an ad selection process 470. These processes 450, 460, 470 operate in conjunction with a database 410 maintained by the ad server 130. In the advertiser registration process 450, an advertiser provides identifying information to the ad server 130. In the advertisement registration process 460, the advertiser identifies to the server the ad content, and the advertiser provides targeting information with respect to that ad

content. The advertiser also selects times for delivery of its registered ad content and delivery intervals. In the ad selection process 470, the ad server 130 correlates the ad targeting criteria against subscriber information and selects ad content for delivery to the subscribers. The method preferably further includes an advertisement transmission process 490. In this process 490, the ad server 130 causes the gateway 140 to transmit ad messages for the ad content selected in the ad selection process 470 to the selected subscribers. The ad messages are preferably transmitted to the subscriber's mobile wireless display device individually, but may also be transmitted in batch.

10           The database 410 is preferably relational, comprising tables, the tables comprising rows, in the manner known in the art. Figures 8A and 8B present a view of preferred objects in the database 410. Bold fields constitute the primary key for the table, identifying a row, and therefore must contain data for every row. Italic fields are "not null" and must contain data for every data row. Fields with an asterisk (\*) are generated within an automatic sequence to be unique for every row. 15           This view is just one way of embodying the database 410, and others are within the scope of the invention. Three user tables 905, 910, 915 include information about subscribers. The ad server 130 preferably creates a record in each of these tables 905, 910, 915 for each subscriber.

20           The User\_validation table 905 is used for login information. The User\_validation table includes a Username field 905a, a Login\_type field 905b, a Password field 905c and a Deleted field 905d.

The User\_variable table 910 holds subscriber (or service) related variables that are not defined elsewhere. The User\_variable table 910 includes a Username field 910a, a Name field 910b and Value field 910c. The Name field 910b stores a variable name, and the Value field 910c stores a value for the variable name in the

5 Name field 910b for the user identified in the Username field 910a.

The User\_info table 915 holds information collected about the subscriber, including the subscriber's personal profile. The User\_info table includes a Username field 915a, a Family\_name 915b field, a Given\_name field 915c, a Gender field 915d, a Birthdate field 915e, an Operator field 915f, a TargetNo field 915g, a

10 TargetNo\_pin field 915h, a Timezone field 915i, a VoiceNo field 915j, a FaxNo field 915k, a MobileNo field 915l, an Email field 915m, an Address field 915n, a City field 915o, a Postalcode field 915p, a Country field 915q, a Region 915r field, a Demographic field 915s, a Company field 915t, a Title field 915u, an Occupation field 915v, a Marital\_status field 915w, a Household field 915x, a Hobbies field

15 915y and an Updated field 915z. The ad server 130 preferably creates User\_validation, User\_variable, and User\_info records for each subscriber.

A Request\_log table 920 and a Session\_log table 925 store basic logging and reporting information. The Request\_log table 920 includes a Username field 910a, a Time field 910b, a Success field 910c, a Channel\_name field 910d and a Name field

20 910e. The Session\_log table 925 includes a Username field 925a, a Starttime field 925b and an Endtime field 925c. Advanced reporting can be achieved through joins with other tables or through creation of additional table structures.

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A Deliver table 930 holds the delivery preferences for each subscriber, and includes a Reg\_id field 930a, a Username field 930b, a Send\_days field 930c, a Send\_times field 930d, an Ads\_received field 930e, an Enabled field 930f, and a Max\_promos field 930. The Send\_days field 930c and the Send\_time field 930d store the days and times, respectively, at which to deliver ads. The Ads\_received field 930e stores the maximum number of advertisements to deliver in a given time period.

A Deliver\_category table 935 is linked to the Deliver table 930 to indicate the advertisement categories that are acceptable to the subscriber. The Deliver\_category table 935 includes a Reg\_id field 935a and a Category field 935b.

A Promoter table 950 includes information about each organization which desires to have content-area advertisements and promotions transmitted to subscribers. The Promoter table 950 includes a Name field 950a, a Password\_id field 950b, an Address 950c field, a PhoneNo field 950d, an Email field 950e, an Updatedfield 950f, a City field 950g, a State field 950h, a Postalcode field 950i, a Country field 950j, a Faxno field 950k and a Comments field 950l.

A Product table 955 includes information about products the promoter wishes to promote. The Product table 955 includes a Name field 955a, a Promoter\_name field 955b, a Logo\_filename field 955c, a Logo\_binary field 955d, a Logo\_binary\_type field 955e, a Toplist field 955f and an Updated field 955g. Thus, the Product table 955 includes logos and other information that can be displayed to the user in association with the promotion.



A Promotion table 960 includes information about the advertisements and promotions. The Promotion table includes an Id field 960a, a Product\_name field 960b, a Promoter\_name field 960c, a Leadline field 960d, a Text field 960e, a Text\_type field 960f, a Code field 960g, a Number\_sent field 960h, a Startdate field 960i, an Expiredate field 960j, a Max\_usage field 960k, a Region field 960l, a Graphics\_dir field 960m, a Valid\_days field 960n, an Updated field 960o and a Demographics field 960p.

A Promo\_category table 965 associates each ad with one or more categories. The Promo\_category table 965 includes an Id field 965a and a Category field 965b.

Each advertiser may have one or more ads for each of one or more products. Each ad in turn may be associated with one or more categories. The categories form a hierarchy, which is defined in a Category\_parent\_child table 970 . The record of which ads have been sent to which subscribers is kept in a Promo\_log 975 table. The Promo\_log table 975 includes an Id field 975a, a Username field 975b, a Time\_sent field 975c and a Send\_count field 975d.

Referring now to Figure 5, there is shown a flow diagram of the advertiser registration process 450. Preferably, registration is performed by the advertiser online, and more preferably using the Web. Advertisers may also be registered through third parties, and through automated proxies. In the first step of the preferred embodiment, the advertiser connects his local device 100 to the Web (step 510). Next the advertiser activates his browser (step 515). Then, the advertiser points his browser to the ad server 130 (step 520). The ad server 130 preferably includes a

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facility for the advertiser to identify himself, preferably through a login process which can be automated (step 525).

In the login process (step 525), the ad server 130 necessarily treats a new advertiser differently than an existing advertiser (step 530). New advertisers are  
5 asked to enter contact and other information for the Promoter table 950 (step 535). The ad server 130 preferably provides an existing advertiser with the ability to revise their Promoter records (step 540), such as through appropriate Web pages.

Referring now to Figure 6, there is shown a flow chart of the advertisement registration process (step 460). Three things happen in the ad registration process.  
10 During ad registration, various information is gathered and preferably stored in the Product table 955 and the Promotion table 960. Assuming that the advertiser has already logged on to the ad server 130 as described above, the ad server 130 displays one or more pages in which the advertiser can create, edit and delete Product and Promotion records. The ad server 130 preferably permits the advertisers to edit and  
15 delete their respective Product and Promotion records.

One of the events in the ad registration process is that the advertiser provides information to the ad server 130 about the ad content (step 615). The ad content itself must be made available to the ad server 130, either by storing the ad content itself in the ad server 130 (e.g., in Text field 960e), by providing an address for the  
20 ad content (e.g., a URL), or by identifying a server which will produce or identify the ad content when needed.

The ad server 130 preferably associates each ad with one or more of the categories in the Category table 965 (step 625). The ad server 130 preferably allows

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advertisers to specify the categories for which their ad content is appropriate, although this could be performed by the ad server 130 automatically. Advertiser names and advertiser categories may be expressed as identifiers, strings, some arbitrary token, or other means. The categories are preferably: apparel (clothing, accessories, etc.), automobiles, dining, electronics / computers / Internet, 5 entertainment / movies / music / books, gifts (flowers, chocolates, etc.), health & beauty, home & garden, and travel.

Another of the events in the ad registration process is that the advertiser provides information to the ad server 130 about how the ad content should be 10 targeted (step 620). In accordance with the invention, advertisers can target their ad content based upon many different types of subscriber characteristics, such as demographics, psychographics and geographics. The targeting can be based upon static information and dynamic information about each subscriber, and this can be either quantitative or qualitative information about each subscriber. Static 15 quantitative information includes gender, birthdate, service provider, income, job title, occupation, industry, home address, work address, marital status and hobbies. Dynamic quantitative information includes the subscriber's current location, and whether the subscriber is moving.

Furthermore, the advertisers preferably can target ad content based upon 20 quantitative and qualities analysis of the subscribers. Because the ad server 130 preferably records which ad content each subscriber has been sent and which ad content each subscriber responded to, the ad server 130 can extract psychographic information about the subscribers. The characteristics of previously delivered ads,

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and when a subscriber has responded to those ads, are useful in predicting which kinds of ads are more likely to be successful for a given subscriber. For example, a particular subscriber may be more responsive to ads for food than for clothing, or a particular subscriber may be more responsive to giveaways than to ads for discounts.

5           Psychographic information about subscribers' use of their mobile wireless display device is also useful. This psychographic information may include the regions that a subscriber calls, the length of calls, even the identity of the called party. The gateway 140 can provide the ad server 130 with call data records which can be used to derive this information. For example, subscribers who frequently call  
10 a certain distant city could be targeted with travel ads, and subscribers who call a particular kind of restaurant could be targeted with ads for similar restaurants. Other psychographic information may also be obtained about the subscribers from other sources, and used alone or in conjunction with the subscriber information already stored by the ad server 130. All of this information preferably can be used by the  
15 advertisers for improved targeting of their ads.

Another of the events in the ad registration process is that the advertiser provides information to the ad server 130 about when the ad content should be delivered (step 625). The Promotion record preferably includes fields through which the advertiser specifies when the ad server 130 may cause an ad message for the  
20 advertiser's ad content to be transmitted to subscribers (or for the ad content to be displayed, depending on the transport mechanism). Furthermore, the Promotion record preferably includes fields in which the advertiser species the period for the

27

ad's run, and the interval between transmissions of the ad to a given type of subscriber.

Preferably as part of step 620, the advertiser can control when and how frequently users will see the ads. The frequency is preferably expressed in terms of number of views per a unit period, preferably expressed as number of views of the ad content per week. The advertiser preferably can also select days of the week and times of day for subscribers to see their ad content. For example, a vendor of gourmet coffee may wish to send ad messages to a first group of subscribers on weekday mornings. The same vendor may wish to send the same ad message to a second group of subscribers in the evening. This step 620 permits the advertiser to select an ad delivery schedule which increases the ads' effectiveness. The ad server 130 stores these criteria in the database 410.

In addition to creating and updating the advertiser's profile and ad records, the ad server 130 preferably includes web pages through which the advertiser can review information about the transmission of their ads, both detail records and statistics.

Referring now to Figure 7, there is shown a flow chart of the advertisement selection process 470. When it is time to select an advertisement to deliver to a given subscriber (step 705), the ad server 130 uses the Promotion table 960, Promo\_category table 965, Deliver table 930, Deliver\_category table 935, User\_info table 915, User\_variable table 910, and User\_validation table 905 to identify the advertisements that are compatible with the subscriber's preferences. Specifically, the rows in the Promotion table 960, for which there are rows in the Promo\_category

table 965 with the same ID whose Category field matches the Category field of one of the rows in the Deliver\_category table 935 with the same Reg\_id field as the row in the Deliver table 930 for the subscriber, and for which the contents of the Demographics field match the various fields in the subscriber's row in the User\_info table 915, and for which the current date and time fall within the parameters set by the Startdate, Expiredate, and Intervals fields, are the ads that are considered for transmission (step 710).

If more than one ad fits these criteria (step 715), the ad server 130 selects an ad arbitrarily (step 720), but may also include such criteria as limiting the number of times a particular ad may be seen by the subscriber, advertisement priority, or other unspecified criteria. Furthermore, the pool of matches may be further limited based upon best-fit criteria.

The advertisement selection process then passes the selected ad to the advertisement transmission process 490, in which selected ad content is delivered to the targeted mobile wireless display devices. Once the ad message has been dispatched, the ad server 130 increments the Ads\_received field 930e of the subscriber's record. It should be appreciated that the meaning of "delivery" of ad content can vary depending on the embodiment.

Depending on the type of mobile wireless display device, the relationship between the ad server 130 and the gateway 140, and how much control the subscribers have over their mobile wireless display devices, the particular steps in delivering ad content will vary. For example, if a targeted subscriber's mobile wireless display device is powered off or out of the service area, then the gateway

might (a) send an ad message for provisioned ad content anyhow because the gateway 140 does not know that the mobile wireless display device is unavailable, (b) queue and send the ad message when the mobile wireless display becomes available, (c) continually check for availability of the mobile wireless display device  
5 until the provisioned ad content's delivery time has expired, or (d) omit delivering the provisioned ad content entirely.

Consider too how the mobile wireless display will react to receipt of an ad message. In some embodiments, the mobile wireless display device immediately displays the respective ad content. In other embodiments, the mobile wireless  
10 display device generates an alert that the ad content is available, and waits for the subscriber to request display of the ad content. In yet other embodiments, the ad message might be transmitted in advanced of when the respective ad content is to be displayed, and the ad message includes an indication of when the respective ad content is to be displayed or some events in the mobile wireless display device  
15 which triggers the display of the ad content.

Preferably, ad messages may be dispatched without delay. This is useful for ad targeting which is time sensitive, such as for current location and time of day. This may entail skipping the ad selection process 470, or providing a "fast track" through that process.

20 Although exemplary embodiments of the present invention have been shown and described, it will be apparent to those having ordinary skill in the art that a number of changes, modifications, or alterations to the invention as described herein may be made, none of which departs from the spirit of the present invention. All

such changes, modifications and alterations should therefore be seen as within the scope of the present invention.



## CLAIMS

It is claimed:

- 1     1.     A method of provisioning ad content for delivery to mobile wireless display  
2     devices, the mobile wireless display devices used by respective subscribers of a  
3     wireless service, the method comprising the steps of:
  - 4         (a)     an advertiser registration step comprising an advertiser providing  
5         profile information about the advertiser to an ad server, and the ad server storing the  
6         profile information in a database;
  - 7         (b)     an ad registration step comprising the advertiser identifying an item  
8         of ad content to the ad server, and the ad server storing the identification of the item  
9         of ad content in the database;
  - 10        (c)     an ad targeting step comprising the advertiser identifying targeting  
11        criteria to the ad server, and the ad server storing the targeting criteria in the  
12        database, wherein the targeting criteria comprises characteristics of one or more  
13        subscribers of the wireless service to whom the advertiser wishes to direct the item  
14        of ad content;
  - 15        (d)     an ad scheduling step comprising the advertiser selecting acceptable  
16        times for delivery of the item of ad content, and the ad server storing the acceptable  
17        times in the database;
  - 18        (e)     an ad selection step comprising the ad server correlating the targeting  
19        criteria in the database and the acceptable times in the database for the item of ad

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20 content against information about the subscribers in the database to thereby identify  
21 at least one subscriber for delivery of the item of ad content;

22 (f) an ad transmission step comprising the ad server causing an ad  
23 message to be sent to the identified at least one subscriber in accordance with the  
24 acceptable times selected in the ad scheduling step, the ad message for causing the  
25 item of ad content to be viewable on the mobile wireless display devices of the  
26 identified at least one subscriber.

1 2. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 1, the ad scheduling step further comprising the  
3 advertiser selecting a number of times for delivery of the item of ad content to the  
4 subscriber in a unit time period.

1 3. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 1, in the ad scheduling step, the times for  
3 delivery of the item of ad content being based upon subscribers' psychographic  
4 qualities.

1 4. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 1, further comprising the ad server tracking  
3 responses by the identified at least one subscriber to the delivered item of ad content,  
4 the ad server preparing a report summarizing the responses, and the advertiser  
5 reviewing the report.

1 5. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 1, in the ad scheduling step, selecting acceptable

3 times for delivery of the ad content item based upon responses to previously  
4 delivered ad content.

1 6. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 1, in the ad scheduling step, the acceptable times  
3 comprising time of day.

1 7. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 1, in the ad scheduling step, the acceptable times  
3 comprising day of the week.

1 8. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 1, in the ad scheduling step, the acceptable times  
3 comprising day of the year.

1 9. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 1, in the ad scheduling step, the acceptable times  
3 comprising day of the month.

1 10. A method of provisioning ad content for delivery to mobile wireless display  
2 devices, the mobile wireless display devices used by respective subscribers of a  
3 wireless service, the method comprising the steps of:

4 (a) an advertiser registration step comprising an advertiser providing  
5 profile information about the advertiser to an ad server, and the ad server storing the  
6 profile information;

7 (b) an ad registration step comprising the advertiser identifying an item  
8 of ad content to the ad server, and the ad server storing the identification;

9 (c) an ad targeting step comprising the advertiser identifying targeting  
10 criteria to the ad server, and the ad server storing the targeting criteria, the ad  
11 targeting criteria comprising characteristics of one or more subscribers of the  
12 wireless service;

13 (d) an ad selection step comprising the ad server correlating the targeting  
14 criteria against information about the subscribers to thereby identify at least one  
15 subscriber for delivery of the ad content.

1 11. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 10,

3 in the ad targeting step, the characteristics comprising a desired location of a  
4 subscriber's mobile wireless display device;

5 in the ad selection step, the correlation including a test of whether a given  
6 subscriber's mobile wireless display device is in the desired location.

1 12. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 11, wherein the desired location comprises a  
3 geographic region.

1 13. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 11, wherein the desired location comprises a  
3 region defined by a postal code.

1 14. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 11, wherein the desired location comprises a  
3 politically defined region.

1 15. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 10,  
3 in the ad targeting step, the characteristics comprising a demographic quality;  
4 in the ad selection step, the correlation including a test of whether a given  
5 subscriber has the demographic quality.

1 16. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 15, wherein the demographic quality is selected  
3 from the group of: gender, birth date, service provider, income, job title, occupation,  
4 industry, marital status and hobbies.

1 17. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 10,  
3 in the ad targeting step, the characteristics comprising a geographic quality;  
4 in the ad selection step, the correlation including a test of whether a given  
5 subscriber has the geographic quality.

1 18. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 17, wherein the geographic quality is selected  
3 from the group of: home address, work address, current location and whether the  
4 mobile wireless display device is moving.

1 19. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 10 further comprising an advertisement  
3 transmission step comprising the ad server causing an ad message to be sent to the  
4 identified at least one subscriber, the ad message for causing the item of ad content

5 to be viewable on the mobile wireless display devices of the identified at least one  
6 subscriber.

1 20. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 10,

3 in the ad targeting step, the characteristics comprising a psychographic  
4 quality;

5 in the ad selection step, the correlation including a test of whether a given  
6 subscriber has the psychographic quality.

1 21. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 20, wherein the psychographic quality is  
3 selected from the group of: the regions that a subscriber calls, the length of calls, and  
4 the identity of called parties.

1 22. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 20, wherein the psychographic information  
3 includes subscribers' ad redemption characteristics.

1 23. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 22, wherein the ad redemption characteristics  
3 include when the subscribers redeem ads.

1 24. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 10 further comprising the ad server tracking  
3 responses by the selected subscribers to the delivered item of ad content, the ad

4 server preparing a report summarizing the responses, and the advertiser reviewing  
5 the report.

1 25. The method of provisioning ad content for delivery to mobile wireless  
2 display devices as set forth in claim 24, in the ad targeting step, selecting targeting  
3 criteria based upon responses to previously delivered ad content.

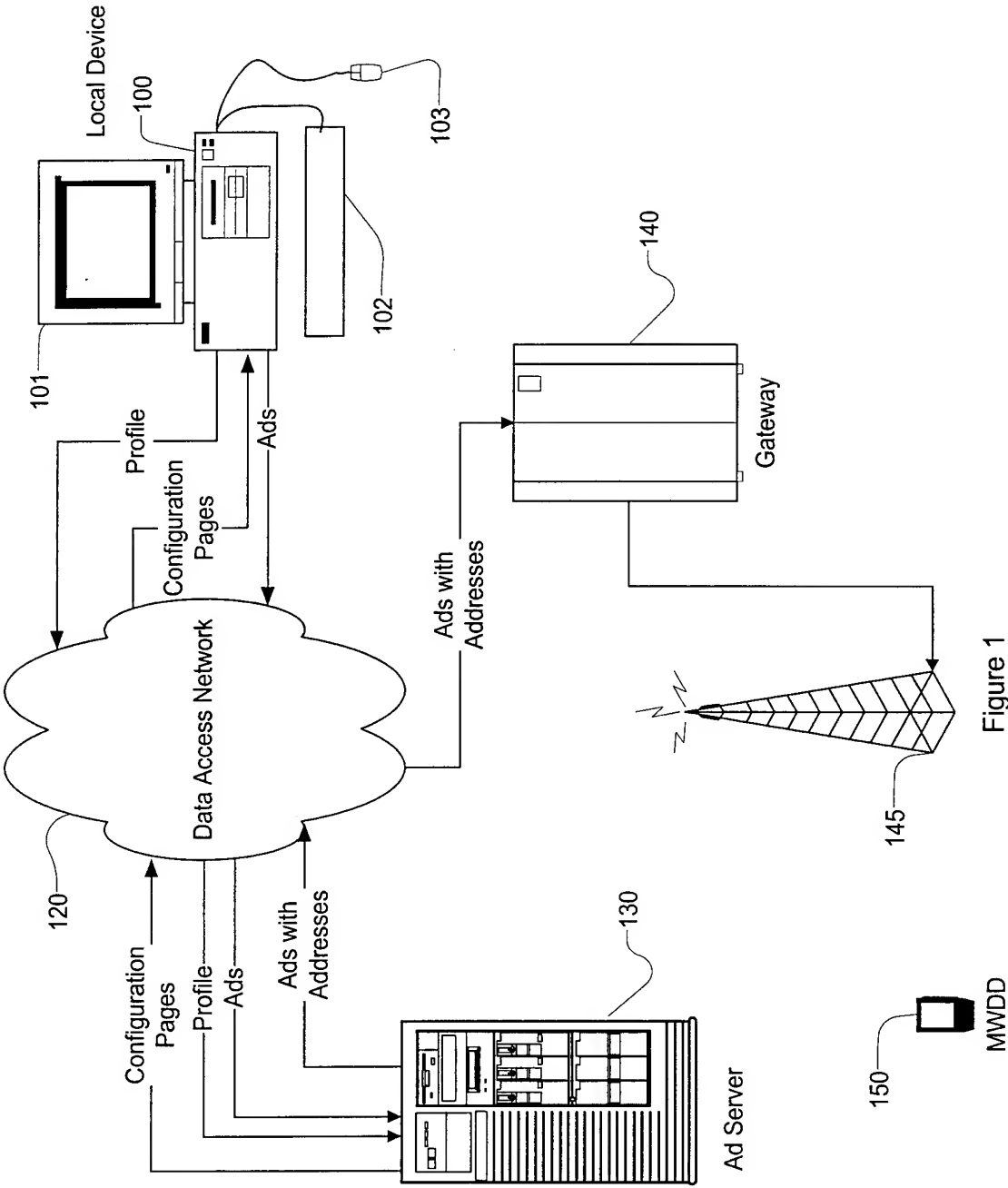


Figure 1



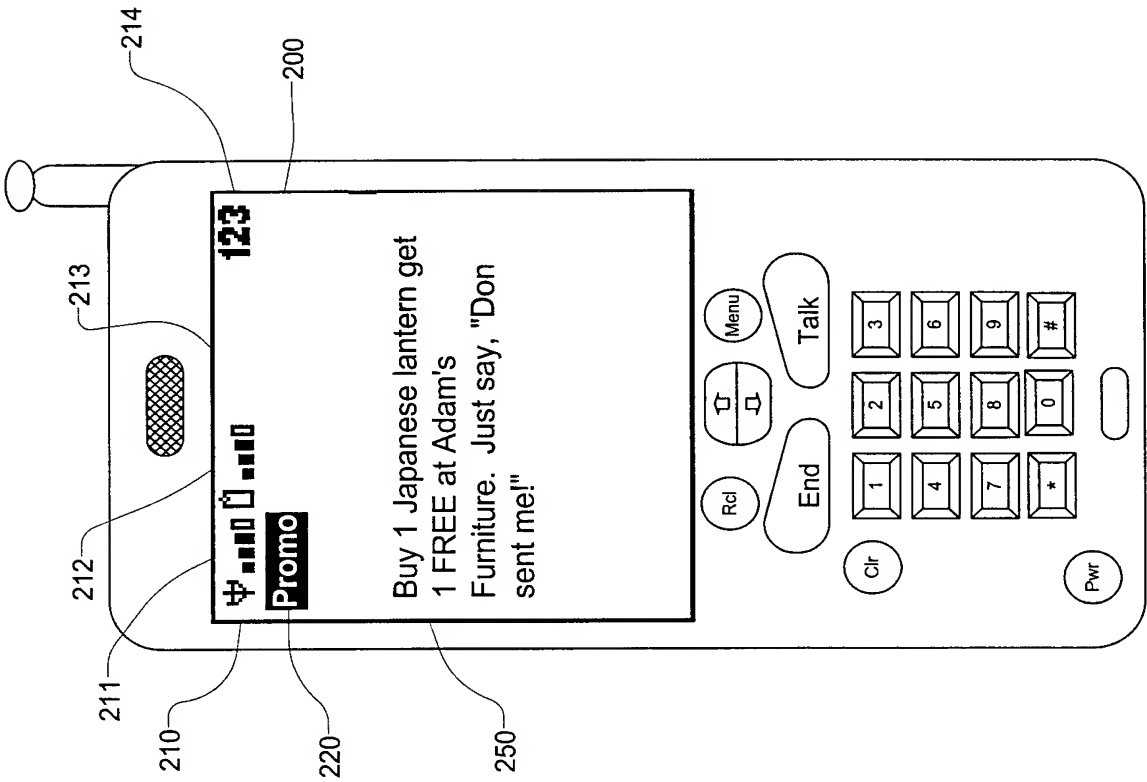


Figure 2

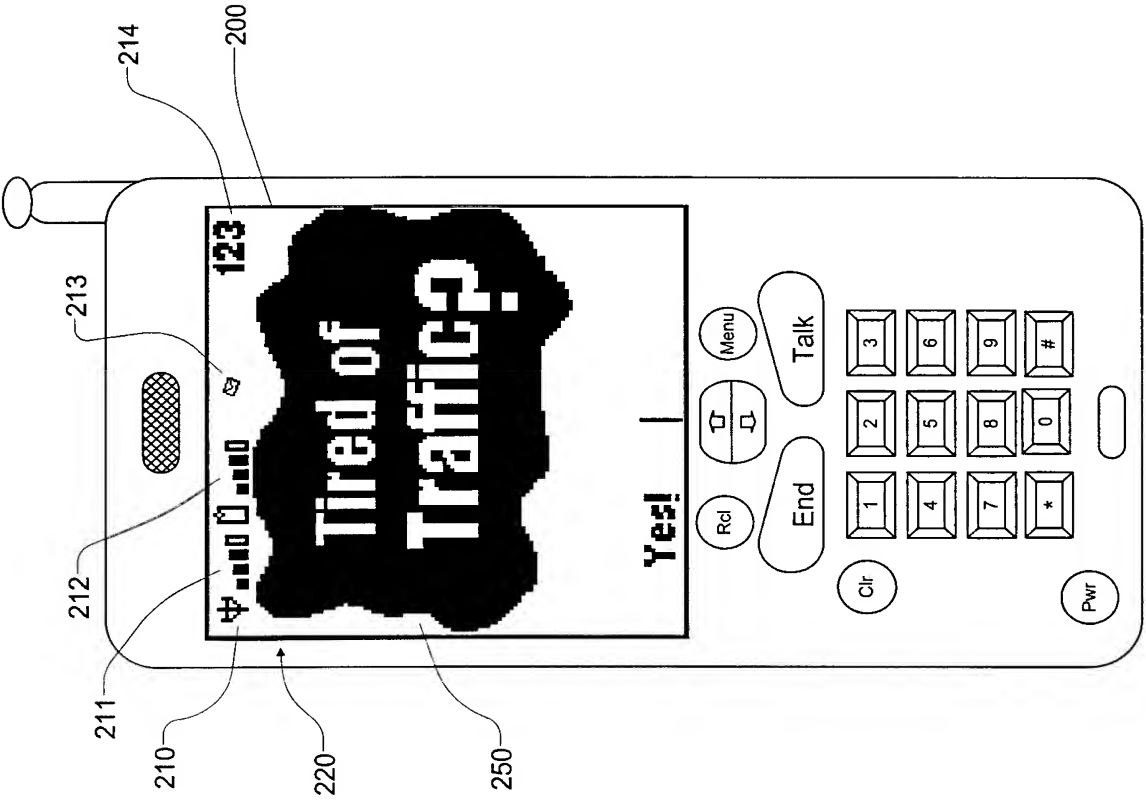


Figure 3

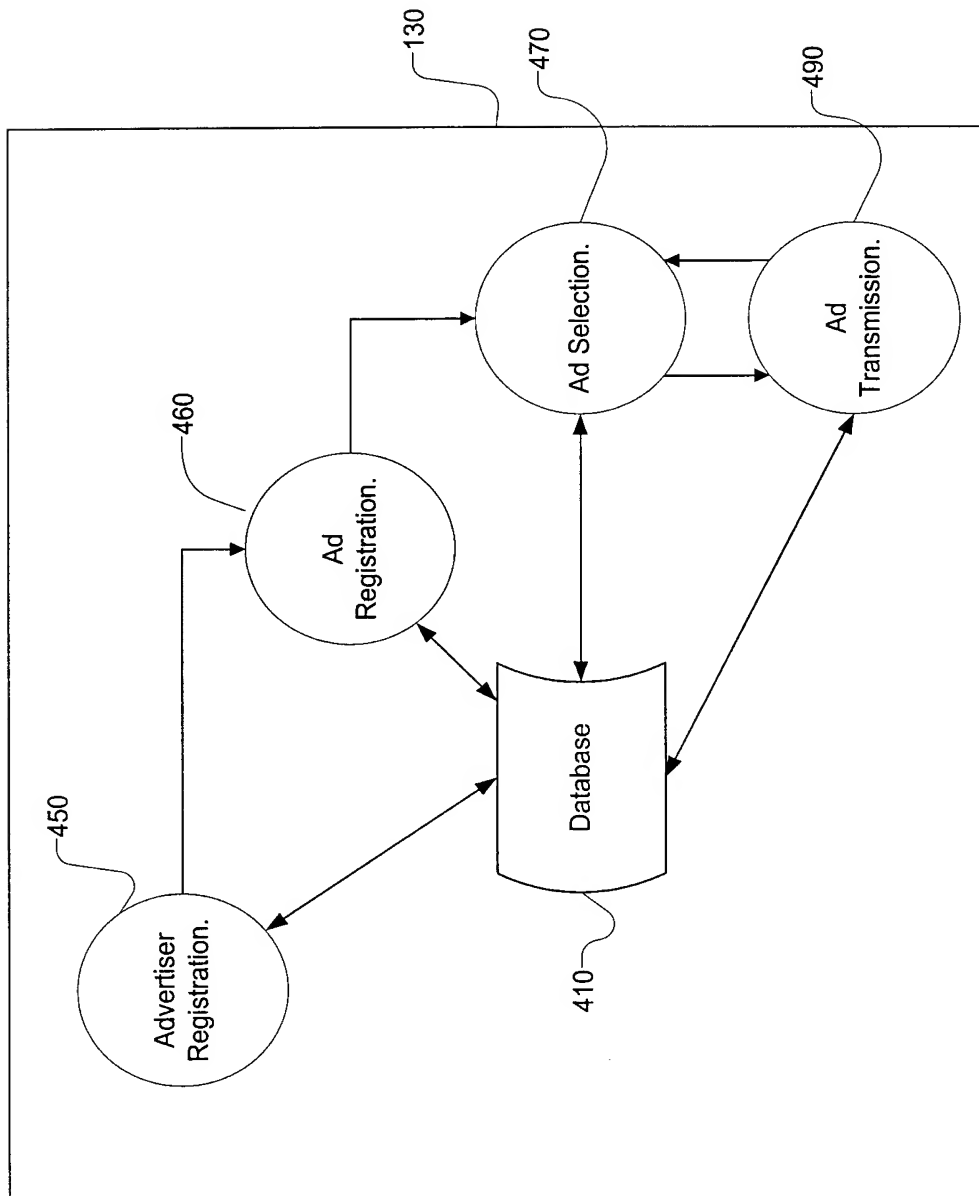


Figure 4

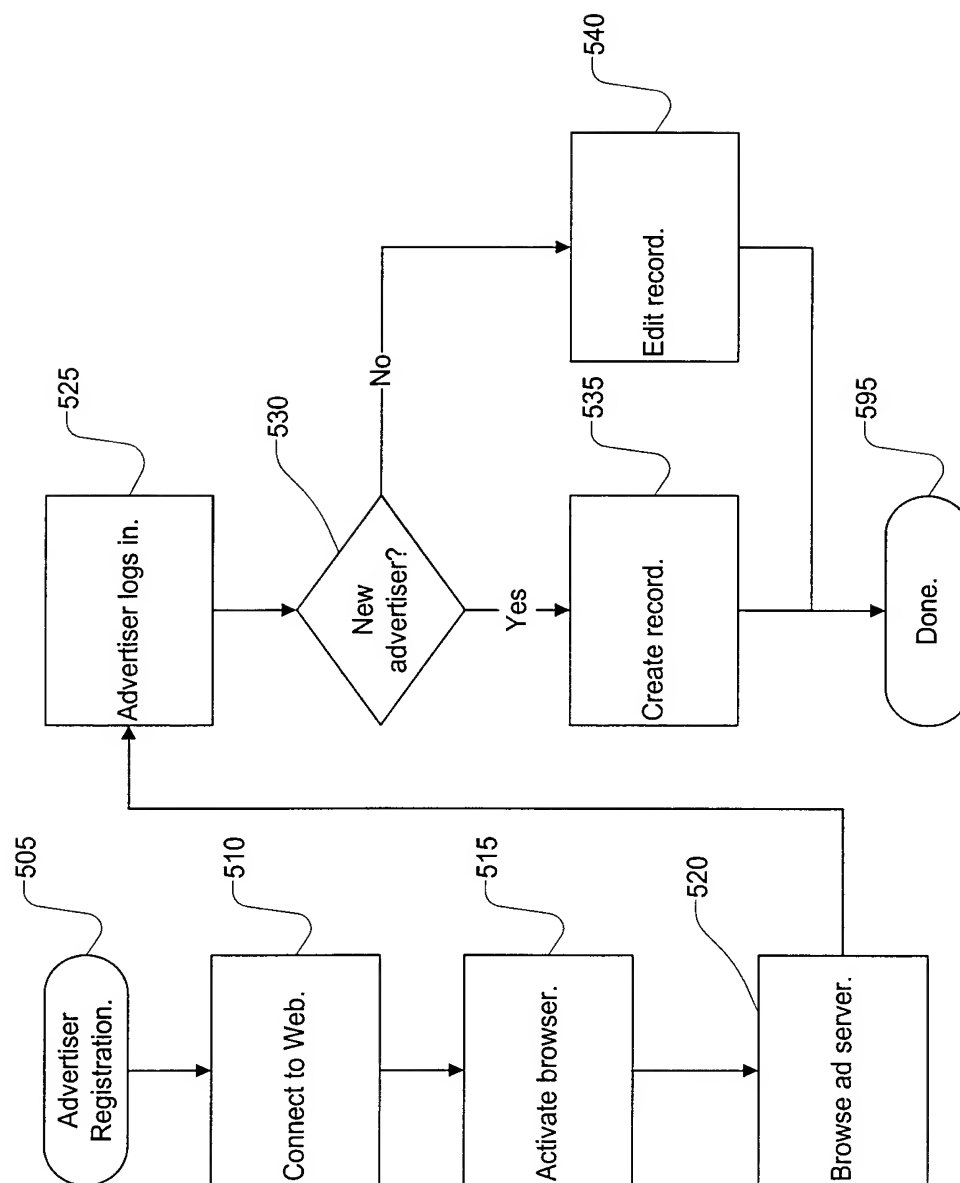


Figure 5

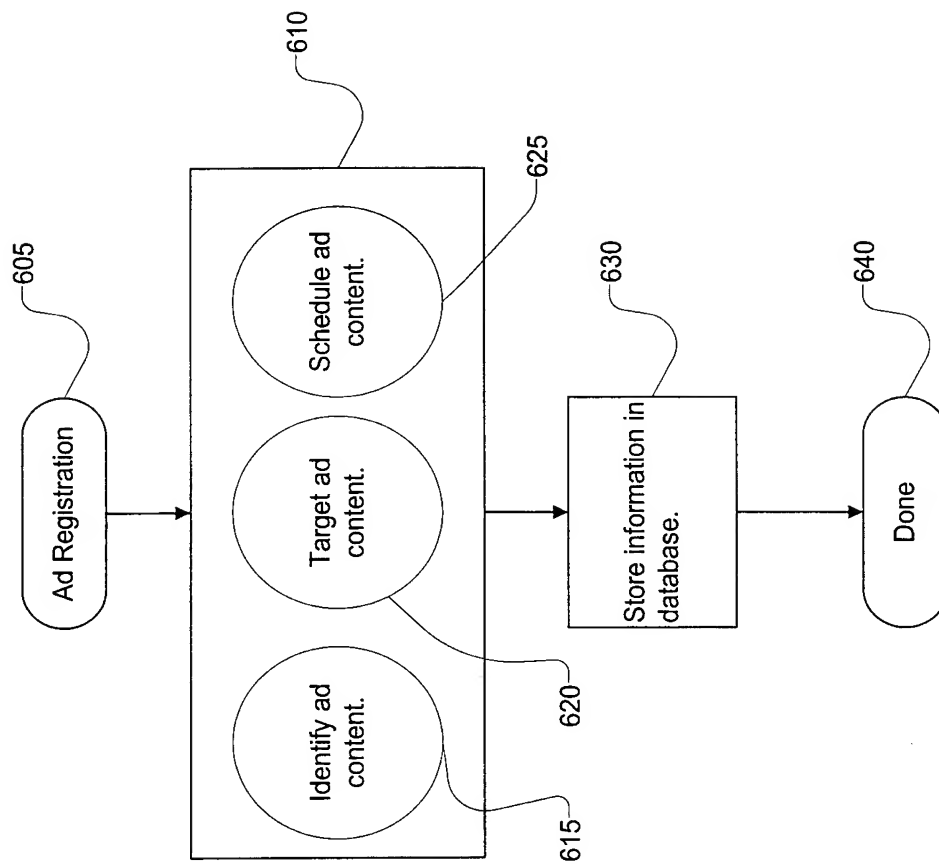


Figure 6

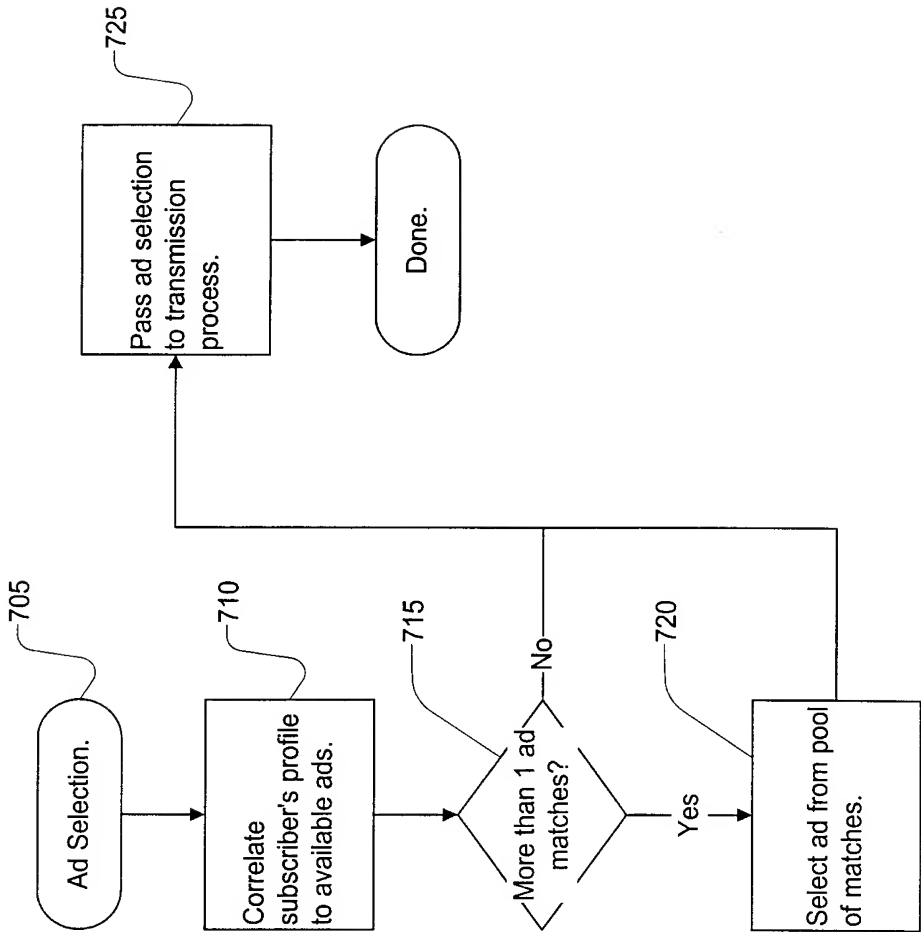


Figure 7

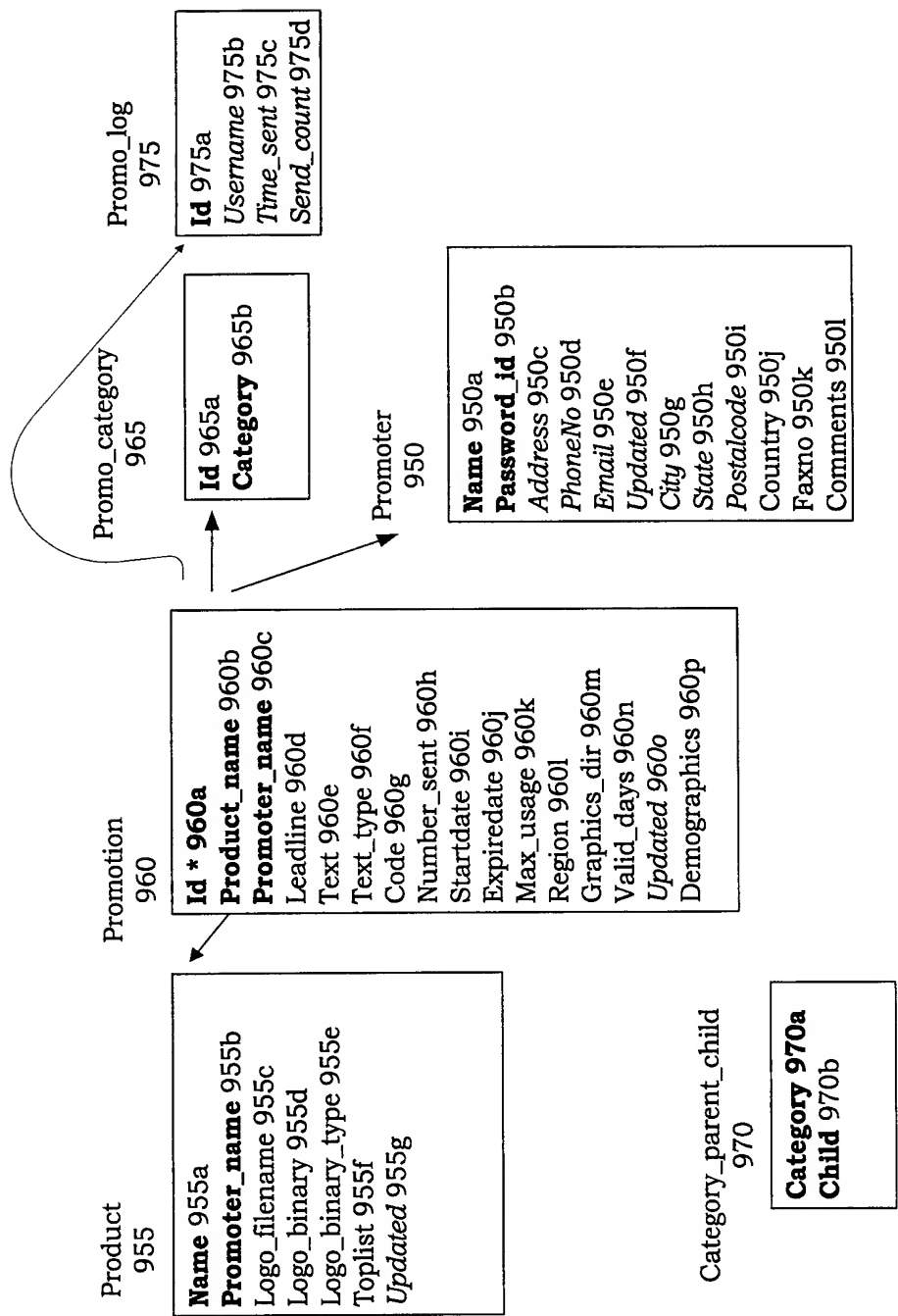


Figure 8A

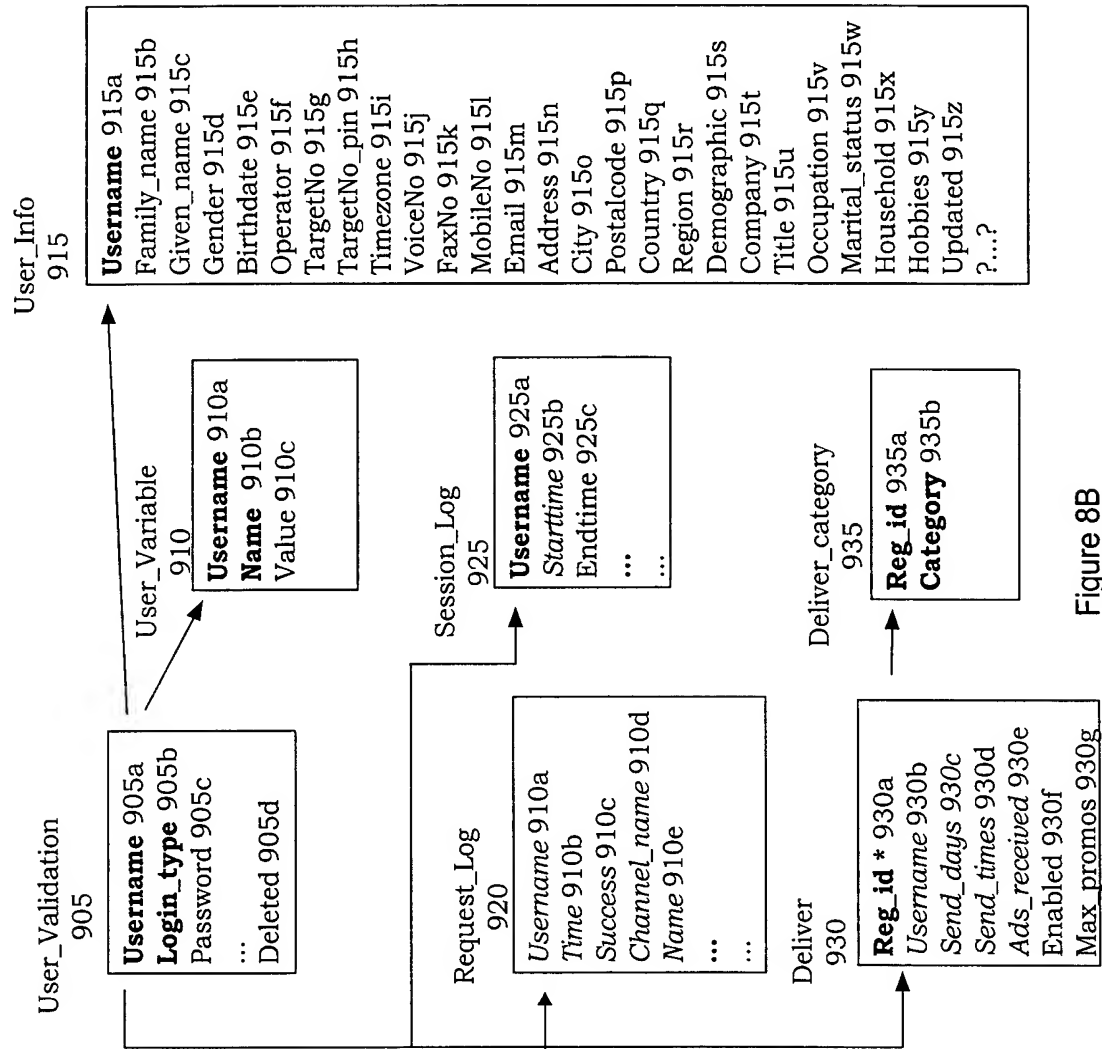


Figure 8B